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Remarks

Applicants thank the Examiner for his time and consideration during the telephonic interview conducted on 2/18/2009 with Applicant's representative, Marianne Downing. During this interview, the Kleiman and Barton references were discussed, along with claim 28. No agreement was reached on the claims, however.

Applicant respectfully requests reconsideration of the present application in view of the amendments set forth above and the below remarks.

Claims 28-68 are pending and all claims are rejected. Claim 28, 45, and 56 are in independent form. Claims 28-30, 32, 35, 37, 38, 41, 42, 43, 45, 47, 49, 52, 54-56, 58, 60 and 61 are hereby amended.

Claims 32 and 49 are hereby cancelled.

Rejections under 35 USC 101

Claims 56-58 are rejected as allegedly reading on non-statutory subject matter because of their reference to a "computer-readable medium". In particular, the Examiner contends that Applicants' Specification gives "computer-readable medium" a definition that includes a "transmission medium," where transmission media are not currently viewed as statutory subject matter. Applicants respectfully disagree that Applicants' term "computer-readable medium" necessarily must include a "transmission medium," noting that Applicants show in FIG. 2 a tangible medium as a "computer-readable medium," and further describe this computer readable-medium as being, e.g., a CD-ROM (see page 11, lines 10-18). Applicants clearly differentiate, at page 8, lines 10-22, between tangible media such as a CD-ROM and a transmission medium. However, to more particularly address this rejection, Applicants have amended claim 56 (from which claims 57 and 58 depend) to refer to a computer-readable storage medium, which is clearly supported by the term "machine-readable storage medium" at page 8, lines 12-13 of Applicants' Specification. Applicants believe that reference to a storage medium excludes

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intangible media. Accordingly, Applicants respectfully request that the rejection of claims 56-58, under 24 USC 101, be withdrawn.

Rejections Under 35 USC 103(a) - Rejections of claim 28, 45, and 56

Claims 28, 45, and 56 stand rejected under 35 USC 103(a) as being unpatentable over U.S. 6574591 to Kleiman et al. ("Kleiman '591") in view of U.S. 6604118 to Kleiman et al. ("Kleiman '118"), and further in view of US 6034584 to Barton ("Barton"). Claim 1, as amended herein, recites [emphasis added]:

A method for managing data that may be replicated from one or more volumes of data that are part of a first volume group on a first computer system having a first internal logical volume, and first filesystem, the method comprising the computer-executed steps of:

discovering logical information related to the one or more volumes of data that are part of the first volume group on the first computer system;

creating a map of the logical information to physical devices on the first computer system, the map defining a first logical configuration comprising:
information identifying one or more devices associated with one or more physical volumes containing the data, including device serial number, physical address of the device, volume group, logical volume name, file type, and mount point;

information providing definition and structured layout of the first volume group, first internal logical volumes and first file system on the first computer system;

using the map to create a second volume group on a second computer system where the logical configuration of the second volume group is identical to the first logical configuration of the first volume group, including identical volume layout and file system structure as defined by mapping information originally built on the first computer system;

using the map to reconstruct on the second computer system the internal logical volumes and file systems of the first computer system; and

mounting a duplicate of the one or more volumes of data of the first computer system to the second volume group of the second computer system.

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The applied art is not understood to disclose or to suggest the foregoing features of claim 28, as explained further below. The Examiner admits that Kleiman '591 does not teach the following limitations, all of which are part of claim 28 as amended herein:

(a) using a map to create a second volume group on a second computer system, where the logical configuration of the second volume group is identical to the [first] logical configuration of the first volume group [of the first computer system]

(b) using such a map to reconstruct on the second computer system the internal logical volumes and file systems of the first computer system

(c) mounting a duplicate of the one or more volumes of data of the first computer system to the second computer system.

Applicants further note that none of the art of record is understood to teach or suggest the newly added limitations to claim 28, as amended including the limitation that the map include information identifying device serial number, physical address of the device, volume group, logical volume name, file type, and mount point and where the map is used to create a logical configuration on the second computer system that includes identical volume layout and file system structure as defined by mapping information originally built on the first computer system.

Applicants agree that Kleiman '591 does not teach the above limitations of claim 28, nor does Kleiman '591 teach any of the additional limitations to claim 29 that are emphasized in bold underline above, in particular the limitation stating that the map is used to "**create a second volume group on a second computer system where the logical configuration of the second volume group is identical to the first logical configuration of the first volume group, including identical volume layout and file system structure as defined by mapping information originally built on the first computer system**".

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Applicants remain confused as to why the Examiner still has not responded to any of Applicant's previous arguments concerning why Kleiman '591 is utterly inapplicable and inappropriate to be modified or combined with the references as a way to overcome Kleiman's clear teaching that the first and second storage block arrangements are different, not identical (as required by claim 28, as amended). Applicants note again, for the third consecutive Office Action response, that the Kleiman '591 reference expressly and clearly teaches opposite to (and thus away from) claim 28's limitations requiring that the second volume group have the same logical configuration as the first volume group (including all the particulars specified in claim 28, e.g., identical volume layout, identical file system structure, etc.). For example, Applicants refer the Examiner to no fewer than 15 examples in the table provided with previous Office Action response detailing how Kleiman '591 has repeated and total teaching, requirement, and emphasis (including every claim of Kleiman '591) on differing logical configurations between a source storage block and a destination (copy) of that storage block. As one brief example, again, consider Kleiman '591, which begins at col. 1, lines 50-55 [emphasis added]:

It would be advantageous to provide a technique that efficiently copies storage blocks from the source file system (arranged according to a first storage block arrangement) to the destination file system that is arranged according to a second storage block arrangement that differs from the first storage block arrangement.

Consider again, continuing on this emphasis of differing logical configurations, col. 3, line 65 through col. 4, line 7, Kleiman '591 states [emphasis added]:

One aspect of the invention transfers data from physical storage blocks that make up a source file system on a first block-oriented media to a second block-oriented media without requiring that the same physical block arrangement be used on the second block-oriented media as the first. Thus, a first storage block arrangement defines the file structure of the source file system and a second storage block arrangement defines the file structure of the destination file system and the first storage block arrangement and the second storage block arrangement are different.

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And again at col. 5, lines 2-5 "The arrangement of storage blocks on the source file system is different from the arrangement of the storage blocks on the destination file system". As noted above, the Examiner recognizes this lack of teaching in Kleiman '591, but the attempts to modify Kleiman '591 with the other references in such a way as to make Kleiman '591 work in the complete opposite way are inappropriate and change the entire principle of operation of Kleiman '591, contrary to MPEP 2143.01. Accordingly, Applicants maintain that one of skill in the art **would expect no advantage** and would have **no reasonable expectation of success** in using any reference, including but not limited to Kleiman '118, and/or Barton, and/or Markson (also cited in the instant office action) where the combination modified the Kleiman '591 reference in such a way that the first and second logical storage block arrangements are changed to be "identical" (i.e., the same). Such modification **completely changes the principle of operation of Kleiman '591 to an exact opposite condition, including the principle of operation of every single one of the 88 claims of Kleiman '591, and, arguably, renders Kleiman '591 inoperable for its stated purpose.**

In an attempt to compensate for the deficiencies of the Kleiman '591 reference, the Examiner further relies on Kleiman '118 and Barton in combination with Kleiman '591. For example, the Examiner cites additional passages in Kleiman '118 as allegedly providing motivation to combine Kleiman '118 with Kleiman '591. Applicants reiterate that one of skill in the art could not possibly have any motivation to modify Kleiman '591 in any way that would result in first and second storage blocks having the same arrangement, which would change the principle of operation of Kleiman '591. Assuming, *arguendo*, that there possibly would be motivation to combine Kleiman '591 with Kleiman '118, and even with the other references cited herein (i.e., Barton and Markson) the instant invention of claim 28, as amended herein, still would not be achieved.

For example, the Examiner cites Kleiman at col. 1, lines 59-61, a passage that refers to duplicating all or part of a file system via consistent "snapshots" (copies) of a file system that are

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maintained so that the consistent snapshots can be transferred at a storage block level using the file servers own block operations. Col. 4, lines 18-46 of Kleiman '118 describe a so-called "snapshot", where the snapshot is:

a set of storage blocks, the member storage blocks forming a consistent file system, disposed using a data structure that allows for efficient set management . . . the data structure for the snapshot is stored in the file system so there is no need to traverse the file system tree to recover it. In a preferred embodiment, each snapshot is stored as a file system object, such as a blockmap. The blockmap includes a bit plane having one bit for each storage block, other than bits used to identify if the storage block is in the active file system

The snapshot of '118 in the cited passage does not seem to be used in the same way as the map of amended claim 28 (i.e., *to create a second volume group on a second computer system where the logical configuration of the second volume group is identical to the first logical configuration of the first volume group, including identical volume layout and file system structure as defined by mapping information originally built on the first computer system, and to reconstruct on the second computer system both the internal logical volumes and file systems of the first computer system*). Rather, Kleiman '118 relates merely to copying file system information, not volume level information. In particular, Kleiman '118 says specifically that the snapshot is different than an active file system because the snapshot is a read-only copy of the file system, whereas the file system is a consistent file system that is used, modified, and updated frequently; the snapshot are used "for backup and mirroring of the file system" (Kleiman '118 at col. 6, lines 8-26). **Thus, the snapshot is a copy of the file system only, not the logical volume information, definition and structured layout of volume groups, internal logical volumes, etc., that are required as part of the "map of the logical information to physical devices" of the invention of claim 28, as amended.**

Applicants additionally note that even if the information of Kleiman '118 were somehow modified so as to be transferred at the storage block level, the actual information being transferred is not information that can "*create a second volume group on a second computer*

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system where the logical configuration of the second volume group is identical to the first logical configuration of the first volume group, including identical volume layout and file system structure as defined by mapping information originally built on the first computer system” and/or “reconstruct on the second computer system the internal logical volumes and file systems of the first computer system” and/or mount “a duplicate of the one or more volumes of data of the first computer system to the second volume group of the second computer system,” as required by claim 28, as amended. It is only file system-level information being transferred, which one of skill in the art clearly recognizes is not the same as logical volume information.

The Examiner admits that neither Kleiman '591 nor Kleiman '118 teaches the limitation in claim 28 of using the map to create a second volume group on a second computer system where the logical configuration of the second volume group is identical to the logical configuration of the first volume group, and relies on Barton for this teaching. The Applicants have studied Barton carefully and fail to see how Barton teaches or suggests “using the map to create a second volume group on a second computer system where the logical configuration of the second volume group is identical to the logical configuration of the first volume group”. All Barton shows copying data (not a “logical configuration”) from one storage device to another storage device within the same computer system, not from a first computer system to a second computer system, as required by claim 28. Thus, Barton would never have to create a second volume group on a second computer system with logical configuration information that includes information about “definition and structured layout of volume groups, internal logical volumes, and file systems” of a first computer system, because Barton does not involve first and second computer systems, as required by claim 28. Barton also never mentions that any of the information copied involves using a map of logical information to physical devices, nor does any of the information that Barton copies involve structured layout of volume groups, internal logical volumes, and file systems on the first computer systems, all of which are required in the map of claim 28, as amended.

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The Examiner also asserts that Barton "synchronizes the mirrored volume" and that this therefore allegedly "implies" that the information between the two volumes necessarily is "identical". This is contrary to Barton, which expressly states that in at least some instances the data will **not** be the same. Specifically, Barton actually adapts so-called "mirroring techniques" (col. 3, lines 12-15) to install an operating system from a first read-only removable media to a second fixed media, all within the same computer system, where, if data is written to the second mirrored volume, it cannot be written back to the read-only removable media, where such

" 'selective mirroring' results in an out-of-sync condition between the two halves of the mirrored volume, yet nothing is done to resolve this condition. As a result, the second data storage device will contain data that mirror the data on the first data storage device, and will also contain data that does not mirror the data on the first storage device. "
(Barton at col. 4, lines 45-52, *emphasis added*).

That is, the logical information is not "identical" between the two "mirrored" volumes of Barton. Applicants note also that Barton similarly fails to teach or suggest any of the aforementioned newly-added limitation to claim 28.

Accordingly, for at least the reasons described above, Applicants argue that the combination of Kleiman '118, Barton, and Kleiman '591 still fails to teach or suggest all of the limitations of claim 28, as amended herein because Kleiman '118 and Kleiman '591, taken individually or in combination, still fail to teach each and every limitation of claim 28 as amended herein. Thus, Applicants maintain that claim 28, together with all remaining claims dependent therefrom (namely, claims 29-31, 33-44 and 59-64) are patentably distinguishable over Kleiman '591, Kleiman '118, and Barton, taken alone or in combination. Accordingly, Applicants respectfully request that the rejection of claim 28 under 35 USC 103 be withdrawn.

Independent claims 45 and 56, as amended herein, contain limitations similar to those of claim 1. For at least the reasons argued above in connection with amended claim 28, Applicants likewise maintain that amended claims 45 and 56, together with all claims dependent therefrom (namely, claims 44-48, 50-54; 65-68 and 57-58, respectively) are patentably distinguishable over

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Kleiman '591, Kleiman '118, and Barton, taken individually or in combination. Accordingly, Applicants respectfully request that the rejection of claims 45 and 56 under 35 USC 103 be withdrawn.

Rejection of claims 29-44, 46-66 57-68

Claims 29-44, 46-55, and 57-68 stand rejected under 35 US C 103(a) over Kleiman '591 in view of Kleiman '118 and Barton, and further in view of Markson et al. (US 20020103889A1) ("Markson"). Claims 32 and 49 are cancelled, thereby mooted the rejection of those claims. Each of claims 29-31, 33-44, 46-48, 50-55, and 57-68 depends from one of the independent claims 28, 45, and 56, as amended herein. As argued above in connection with these independent claims, Kleiman '591, Kleiman '118, and Barton taken individually or in combination, still fail to teach each and every limitation of each of these independent claims. Markson does not compensate for the lack of teachings (and teaching away) of the Kleiman '591, Kleiman '118, and Barton references.

Markson is directed to a method for selectively and logically adding storage to host features dynamically by mapping one or more disk volumes to the host using a storage virtualization layer (emphasis added, see Abstract of Markson). As shown in FIG. 2C, Markson focuses on increasing storage capacity. Markson does not disclose or suggest using the mapping to duplicate volumes of data; but rather, Markson is mapping new storage with empty volume locations for new data. None of these cited paragraphs disclose or suggest duplicating much less using the map to reconstruct on the second computer system the internal logical volumes and file systems of the first computer system and mount a duplicate of the one or more volumes of data on the second computer system (emphasis added). Thus, Markson does not compensate for the insufficiencies of the Kleiman '591, Kleiman '118, and Barton references.

Accordingly, for the above reasons and for those discussed previously in connection with independent claims 28, 45, and 56, as amended herein, even if Markson were combined with

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Kleiman '591, Kleiman '118, and Barton, the resulting hypothetical combination still does not disclose or suggest each and every limitation of independent claims 28, 45, and 56, as amended herein. Because the hypothetical combination of Kleiman '591, Kleiman '118, Barton, and Markson does not teach each and every limitation of the independent claims 28, 45, and 56, as amended herein, it cannot possibly teach each and every limitation of dependent claims 29-31, 33-44, 46-48, 50-55 and 57-68. Thus, Applicants maintain that claims 29-31, 33-44, 46-48, 50-55 and 57-68 are patentably distinguishable over Kleiman '591, Kleiman '118, Barton, and Markson, taken individually or in combination. Accordingly, Applicants respectfully request that the rejection of claims 29-31, 33-44, 46-48, 50-55 and 57-68 under 35 USC 103(a), over Kleiman '591, Kleiman '118, Barton, and Markson, be withdrawn.

According to the Federal Register, Volume 72, No. 195, dated October 10, 2007, at page 57528, Part III of the section entitled "Examination Guidelines for Determining Obviousness under 35 U.S.C. 103 in View of the Supreme Court Decision in *KSR International Co. v. Teleflex Inc.*," in order to establish a prima facie case of obviousness "...the prior art reference (or prior art references when combined) need not teach or suggest all the claim limitations." However, as also stated in Part III, in order to establish prima facie obviousness, "[t]he gap between the prior art and the claimed invention may not be 'so great as to render the [claim] nonobvious to one reasonably skilled in the art.'" Applicants respectfully submits that, based on the above arguments, the Examiner has not met this burden in order to establish prima facie obviousness, at least for the reasons given in connection with the rejection of independent claims 28, 45, and 56, as amended herein, in particular because the Kleiman '591 so clearly and repeatedly teaches the opposite of what is required by claims 28, 45, and 56 as amended herein.

In addition, according to the Federal Register, Volume 72, No. 195, dated October 10, 2007, at page 57528, Part III of the section entitled "Examination Guidelines for Determining Obviousness under 35 U.S.C. 103 in View of the Supreme Court Decision in *KSR International Co. v. Teleflex Inc.*," an obviousness rejection may be made using the familiar teaching-

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suggestion-motivation (TSM) rationale... ." In Part III, it is also stated that "[a]lthough the Supreme Court in *KSR* cautioned against an overly rigid application of TSM, it also recognized that TSM is one of a number of valid rationales that could be used to determine obviousness." Thus, as one criteria used to establish prima facie obviousness, there should be some suggestion and motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. Applicant respectfully submits that the Examiner has not shown a sufficient suggestion or motivation to modify the references or to combine reference teachings, in particular because the Kleiman '591 reference so clearly teaches away from the limitations of claims 28, 45, and 56 as amended herein.

Applicants submit that all dependent claims now depend on allowable independent claims.

It is believed that all of the pending claims have been addressed. However, the absence of a reply to a specific rejection, issue or comment does not signify agreement with or concession of that rejection, issue or comment. In addition, because the arguments made above may not be exhaustive, there may be reasons for withdrawing the prior art cited with regards to any or all pending claims (or other claims) that have not been expressed. Finally, nothing in this paper should be construed as intent to concede any issue with regard to any claim, except as specifically stated in this paper, and the amendment of any claim does not necessarily signify concession of unpatentability of the claim prior to its amendment.

Applicant does not acquiesce to any assertion made by the Examiner that is not specifically addressed herein.

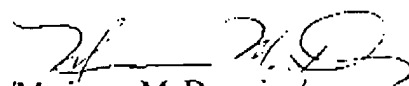
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A two-month extension of time request is included with this response. For these fees and any additional fees that may be due, please apply such fees to Deposit Account No. 50-0845 referencing Attorney Docket: EMC-038PUS.

Respectfully submitted,

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